



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/535,346

10/03/2005

Tadashi Ishikawa

52433/797

7148

26646

7590

11/04/2008

KENYON & KENYON LLP
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER

SHEVIN, MARK L

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

11/04/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<p align="center">Advisory Action Before the Filing of an Appeal Brief</p>	<p>Application No. 10/535,346</p>	<p>Applicant(s) ISHIKAWA ET AL.</p>	
	<p>Examiner Mark L. Shevin</p>	<p>Art Unit 1793</p>	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 22 September 2008 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☐ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☐ The period for reply expires _____ months from the mailing date of the final rejection.
- b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
- (a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
- (b) ☐ They raise the issue of new matter (see NOTE below);
- (c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
- (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☐ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
- The status of the claim(s) is (or will be) as follows:
- Claim(s) allowed: _____.
- Claim(s) objected to: _____.
- Claim(s) rejected: _____.
- Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:
See statements on the following sheet: _____.
12. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
13. ☐ Other: _____.

/Roy King/
Supervisory Patent Examiner, Art Unit 1793

Applicant's arguments filed September 22nd, 2008 have been fully considered but they are not persuasive.

Applicants assert (p. 3, para 9) that the neither '756 patent nor Lu disclose or suggest a nanocrystallized surface layer formed by the process of claim 1.

In response, the Examiner notes that '765 does teach (col. 14, lines 15-32) that during ultrasonic peening, in the surface area of plastic deformation, local heating to very high temperatures and under controlled conditions results in a modified grain structure which has an almost amorphous submicroblock structure." This "submicroblock" structure could be reasonably interpreted as a nanocrystalline structure but the point is that a great deal of energy is put into the surface of the steel material and that microstructure reverts to an amorphous or near amorphous structure but as stated in the previous Office Action (p. 4, para 3), Lu is used to teach the heat treatment step to convert this amorphous white layer into nanocrystals.

Lu teaches that heat treatment can convert the amorphous phase to a completely polycrystalline material with ultrafine crystalline (p. 163, para 2, lines 1-4) and that Statnikov had formed an amorphous white layer only on the treated body surface (col. 7, line 5 and 20-31). Thus as Lu teaches, a heat treatment to the article will convert the amorphous, i.e. the surface region, to a nanocrystalline layer. Lu further states that it is very simple and convenient to control this heat treatment in preparation procedures (p. 163, para. 3, i). Furthermore, the Examiner does not acquiesce in the assertion that Lu only obtained nanocrystals throughout the bulk of a material as Lu teaches (p. 164, para 2, lines 2-4) that controlled crystallization of amorphous alloys can be used to obtain partially crystallized materials with nanometer-sized crystallite embedded in the residual amorphous matrix. Thus not all of the amorphous white layer need to be converted to nanocrystals using the controlled heat treatment processes of Lu.

Applicants assert (p. 4, para 3) that it is impossible to suppress the formation of texture and make the crystal grains equiaxial, and that it is impossible to heat treat the surface layer of the metallic product at a low temperature to cause precipitation of nanocrystals and make the surface layer nanocrystalline.

In response, the Examiner notes that the instant claims do not require equiaxial grains nor do the instant claims recite heat treatment at a low temperature. Furthermore, Applicants' assertions are not backed with technical reasoning or evidence. Regarding the formation of nanocrystals by heat treatment, one of ordinary skill with a background in materials science engineering would recognize that recrystallization is a strain-driven nucleation process that requires

- 1) some minimum critical deformation to initiate recrystallization
- 2) the smaller the degree of deformation, the higher the temperature required to initiate recrystallization
- 3) the final grain size chiefly depends on the degree of deformation and to a lesser degree on the annealing temperature, normally being smaller the greater the degree of deformation and the lower the annealing temperature